

Abstract Submitted
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Cosmic Muon Detection using the NSCL Modular Neutron Array¹ W.F. ROGERS, S. MOSBY, E. MOSBY, J. GILLETTE, M. REESE, Westmont College, MONA COLLABORATION — The NSCL Modular Neutron Array (MoNA), constructed by a multi-institution collaboration (including several undergraduate colleges), was designed and constructed for the study of nuclei near the neutron dripline. During offline periods we've developed a program for use of MoNA for monitoring the long-term behavior of the cosmic muon angular flux distribution. The top and bottom layers of the array (each consisting of nine 2-m long position-sensitive scintillator detectors) are used to optically image the 2-dimensional muon flux distribution over a wide angular range of the sky. Continuous data acquisition is divided into hourly runs, locked to the sidereal clock. Of particular interest are time-dependent north-south and east-west asymmetries in the flux distribution, both long term trends as well as values binned into 24 solar and sidereal hours, and long time variation in the total integrated flux. The accumulated cosmic muon data is also used to track individual muons through the array in order to accurately position-calibrate all of the array detectors for use in accelerator experiments. Undergraduate students developed the coding for optical imaging and associated efficiency corrections for the device, and conducted analysis on stored data. Results will be presented.

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